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Separate paging is given to this Part in order that it may be filed as a Separate Compilation.

## PART IV-B

Rules and Orders (Other than those published in Parts I, I-A, and I-L) made  
by the Government of Gujarat under the Gujarat Acts

### URBAN DEVELOPMENT AND URBAN HOUSING DEPARTMENT

#### NOTIFICATION

Sachivalaya, Gandhinagar, 27<sup>th</sup> May, 2021.

#### THE GUJARAT TOWN PLANNING AND URBAN DEVELOPMENT ACT, 1976.

**NO.GH/V/46 of 2021/ TPS-142020-1100-L: WHEREAS** the Government of Gujarat is of the opinion that it is necessary, in the public interest, to make variation in the Comprehensive General Development Control Regulations-2017 sanctioned by the Notification No.GH/V/269 of 2017/EDB-102016-3629-L, dated.12.10.2017, (hereinafter referred as CGDCR) of the Urban Development and Urban Housing Department, Government of Gujarat, Gandhinagar.

**WHEREAS**, in exercise of the power conferred by sub-section (1) of section 116A of the Gujarat Town Planning and Urban Development Act, 1976 (hereinafter referred to as "the Act") the Government of Gujarat published the said variations under Government Notification, Urban Development and Urban Housing Department GH/V/110 of 2020/TPS-142020-1100-L, dated.18.08.2020, in the Gujarat Government *Gazette* Ext. Part.IV-B dated.18.08.2020 on Page No.266-1 to 266-15 for inviting suggestions or objections from public, if any with respect to the proposed variations to the Additional Chief Secretary to the Government of Gujarat, Urban Development and Urban Housing Department, Sachivalaya, Gandhinagar, in writing, within a period of two months from the date of publication of the said variations in the Government *Gazette*.

**AND WHEREAS**, the Government of Gujarat has considered the suggestions and objections so received on merits.

**NOW THEREFORE**, in exercise of the power conferred by sub-section (2) of section 116A of the said Act, the Government of Gujarat hereby sanction the said variations with modification in the said CGDCR as enumerated in the SCHEDULE below.

It shall come into force from the date of this notification in the *Official Gazette*.

#### SCHEDULE

New chapter no.12 as under is inserted in the CGDCR-2017(Part-II).

#### 12. TALL BUILDING

##### 12.1. SCOPE

These regulations shall apply to:

- any building having building height more than 100.00 mts or
- any other building having slenderness ratio (i.e. ratio of height of the building to its minimum width) of 9 or more.

**12.2. APPLICABILITY**

It shall be applicable in:

- a. DI category of Development Authorities viz.,
  - Ahmedabad Urban Development Authority (AUDA),
  - Surat Urban Development Authority (SUDA),
  - Vadodara Urban Development Authority (VUDA),
  - Rajkot Urban Development Authority (RUDA) and
  - Gandhinagar Urban Development Authority (GUDA), and in
- b. Any zone where permissible Base FSI is equal to or more than 1.2.

**12.3. PROCEDURE FOR SECURING THE PERMISSION**

- a. Any developer intending to develop under this chapter shall apply to the Competent Authority along with required documents and drawing as per CGDCR.
- b. Within 10 days from the date of payment of the scrutiny fees and submission of the application for Development Permission, Competent Authority shall forward the entire proposal to the Special Technical Committee (STC) constituted under regulation No. 12.7.
- c. After the clearance is given by STC for a proposed tall building, the same shall be forwarded to the Competent Authority with recommendation for further necessary action.
- d. No further changes of any kind shall be effected without approval of the STC.
- e. Any changes made in the proposal without obtaining clearance from STC, earlier clearance given by the STC shall be treated as revoked / invalid.

**12.4. PLANNING PROVISIONS****12.4.1. BUILDING HEIGHT**

Height of the building shall be measured from average ground level to the highest point of the building. The decision of the Competent Authority shall be final with regard to measurement of building height.

**12.4.2. USE**

The building shall be used only for the following purposes

- a. Residential,
- b. Commercial,
- c. Recreational or
- d. Mix use (any combination of "a.", "b.", & "c.")

**12.4.3. ABUTTING ROAD**

The building unit shall be considered under this regulation only if it abuts on Development Plan / Town Planning Scheme road of minimum 30.00 mts width.

**12.4.4. MINIMUM AREA OF A BUILDING UNIT**

Minimum area of a building unit shall be as under:

Sr. No.	Height of Building (mts)	Minimum area of Building Unit(Sq. mts)
1	More than 100 and upto to 150	2,500
2	More than 150	3,500

**12.4.5. FRONTAGE**

The building unit shall have minimum frontage of:

- a. 50.00 mts if abutting on single road or
- b. 35.00 mts on each road if abutting on more than one road.

**12.4.6. FLOOR SPACE INDEX (FSI)**

Total FSI permitted shall not be, in any case, more than 5.4.

Total FSI = Base FSI + Premium FSI

Where,

- Base FSI means Base FSI permitted in the respective Zone of the Development Plan, and

- Premium FSI means FSI available on Payment. It shall be permitted on payment of an amount for additional infrastructure charges at 50% of Jantry rate of NA open land.

**12.4.7. RELAXATION IN FSI**

The built up area of following shall be excluded from the computation of the FSI:

- Basement and other floors used for the parking;
- Refuge area required as per NBC;
- Entrance Porch /Guest Drop Off Canopy area;
- Atrium;
- Fire escape stairways;
- Service floor;
- Ramps leading to parking spaces;
- Swimming pool on any floor;
- Control room for security and Fire Control;
- Sewerage Treatment Plant/ Effluent Treatment Plant;
- Equipment /Air Handling Rooms (AHU) for air conditioning and ventilation requirements.

**12.4.8. MARGIN**

Irrespective of width of abutting road, minimum margins shall be provided as under:

Sr. No.	Height of the building (mts)	Margins		Distance between	
		Road Side (mts)	Other Sides (mts)	two buildings on the same Podium (mts)	two podiums in the same Building Unit (mts)
1	2	3	4	5	6
1	More than 100 and upto 150	12.00	12.00	15.00	15.00
2	More than 150	15.00		20.00	20.00

Note: Nothing except portable cabin related to security may be permitted in the margins.

**12.4.9. PARKING SPACES**

- The parking spaces shall be provided as per the provisions of CGDCR - 2017.
- However, provision of the following is also mandatory.
  - The location of parking spaces shall be well ventilated.
  - Sufficient provision for visitors parking shall be proposed at suitable location with toilet for drivers.
  - Parking floor, if provided, its height shall not be more than 5.00 mts.
  - Parking floors, if provided, shall not have any features except parapet wall of 1.50 mts height, of R.C.C. having minimum width 200 mm.
  - Parking floor and building face shall flush on the main road side and any other habitable side to allow access for Fire Engine.
  - Electric Vehicle (eV) charging infrastructure:
    - For Residential use, parking space shall have 100% of demarcated ECS, 'eV Ready' with conduits installed.
    - For Non-Residential use, parking space shall have 20% of demarcated ECS, 'eV Ready' with conduits installed.

Where, ECS = Equivalent Car Space.

**12.4.10. BASEMENT**

The basement shall be provided as per the provisions of CGDCR - 2017.

**12.4.11. RAMP**

- The ramp to basement and parking floors shall be minimum 6.00 mts wide for two-way traffic and minimum 3.00 mts width for one-way traffic and shall be provided with Gradient of 1:10 for cars and 1:15 for heavy vehicles.
- If it is proposed to ply the fire engine on the ramp, the width shall be minimum 9.00 mts with turning radius of 12.00 mts minimum shall be provided.

**12.4.12. REFUGE AREA**

The refuge area shall be earmarked exclusively for the use of occupants as temporary shelter, during a fire or terror or any other emergency and for the rescue operations by Fire Department or any other organization dealing with other emergencies when occur in the building.

1. The maximum permissible Refuge Area shall be 4% of Built up area of serving floors.
2. The Refuge Area shall be provided as per the provisions of NBC.
3. First refuge floor/area to be at about 24.00 mts height and thereafter the refuge floor/area shall be provided at interval of about 15.00 mts height.
4. The refuge area shall be approachable easily by all the occupants and all Fire Appliances in case of any disaster.
5. All the refuge areas shall also be easily approachable from common lobby/ fire lift/ staircases & also it shall satisfy the travel distance criteria as mentioned in NBC.
6. No furniture shall be permitted in the refuge area.
7. One toilet and drinking water facility shall be provided in every refuge area.
8. The refuge area proposed shall be preferably planned on the area facing the main road side.
9. The cantilevered refuge area up to 54.00 mts building height shall be provided with railing / parapet of 1.20 mts height and 1.35 mts above building height of 54.00 mts.
10. R.C.C. covering shall be provided above the topmost refuge area.
11. The cantilever refuge area shall have access through a door which shall be painted with a sign in luminous paint mentioning - REFUGE AREA.
12. The lift/s shall not be permitted to open into the refuge areas.

**12.4.13. LIFT**

The planning and design of lifts shall be in accordance with NBC.

**12.4.14. FIRE FIGHTING SYSTEM**

The Fire Fighting System shall be designed conforming with the NBC.

**12.4.15. DISASTER MANAGEMENT PLAN (DMP)**

1. The Disaster Management Plan shall be prepared.
2. Central Control Room/ Building Management System (B.M.S.) Room, for disaster management, shall be proposed abutting the common passage near the exit / reception at Ground floor.
3. Detailed disaster management plan for the onsite and offsite use shall be prepared keeping in view all the possible disaster situations.
4. These DMPs shall be operational system which can be made working immediately after the completion.

**12.5. WIND TUNNEL TEST**

- a. Compulsory.
- b. Report to be submitted along with the proposal for scrutiny by STC.

**12.6. MISCELLANEOUS PROVISIONS**

1. Any proposal of tall building by the Township Developer which is part of the Residential Township approved under "*Regulation for Residential Township -2009*" of the State Government may be considered under these regulation if and only if a plot is carved out for tall building development as a separate building unit from the Township development area and both the plots individually as a building unit satisfy the provisions of the respective regulations.
2. The planning, design and construction of tall buildings shall follow the rules of National Building Code (NBC) of India. The building should further ensure fire safety, structural safety and wind resistance.
3. Wherever not mentioned, the provisions of GDCR-2017 shall apply *mutatis mutandis*.
4. There is no upper limit of Building Height, but shall be subject to airport NOC, Structural Safety, EIA clearance from Department of Forest and Environment and NOC from Fire Department.
5. In consultation with security experts, CCTV cameras, Control room etc. shall be included in building planning and design and shall be installed on completion.
6. The structural safety of the building shall be the sole responsibility of the developer. The STC, Competent Authority or its officers shall not be responsible in any case.

7. Land deduction as decided by the appropriate authority shall be applicable in case where the plots are not the part of the Town Planning Scheme area.
8. Part Occupancy Certificate may be issued on the basis of NOC from the structural consultant and the Fire Officer.
9. Projects having Foreign Direct Investments (FDI) shall be regulated as per Government of India norms.

## 12.7. SPECIAL TECHNICAL COMMITTEE (STC)

### 12.7.1. Constitution of STC

A Special Technical Committee of the members mentioned hereunder shall be constituted by the State Government to advise the Competent Authority regarding the feasibility of development proposals. The competent authority may collect such additional processing fee per proposal at the time of submission of the proposal, as it finds necessary for scrutiny by the STC.

Members of the Special Technical Committee (STC)		
1	Additional Chief Secretary/ Principal Secretary/ Secretary of Urban Development Department, Government of Gujarat	Chairman
2	Professor of Structural Engineering Faculty from Government Engineering College of Gujarat	Member
3	Professor of Soil Mechanics Faculty from Government Engineering College of Gujarat	Member
4	Practicing registered Structural Engineer having experience of more than 5 years in the field of Structural Designing of buildings having height of more than 45.00 mts.	Member
5	Director of Fire Services, Gujarat	Member
6	Technical Member, with specialization in Town Planning from Municipal Corporation or Urban Development Authority, as the case may be.	Member Secretary
In specific case if Chairman desires, any expert may be invited to the STC.		

### 12.7.2. Protocols for STC

- a. Following consultants of the Developer along with the Developer shall jointly present the concept and structural scheme of the building in STC meeting.
  - The Structural Consultant
  - The Geotechnical Consultant along with Architect,
  - Environment Consultant,
  - MEP /Fire & Safety Consultant,
  - Landscape Designer&
  - any other Consultant concerned with the proposed development
- b. The following documents shall be submitted to the Competent Authority in 8 sets which shall be checked and forwarded to STC.

**Appendix A -** Project Personnel on Record Information Sheet filled and signed by the consultants mentioned above and the Developer along with their License No. as applicable.

**Appendix B -** Plot and Geotechnical information filled in and signed by the Geotechnical Consultant.

**Appendix C -** Design Basis Report.

**Appendix D -** Following to be submitted by the Structural Engineer on Record.

(I) DESCRIPTION OF SUB-STRUCTURE

(II) DESCRIPTION OF SUPER STRUCTURE

- c. A checklist shall be filled and submitted by Structural Consultant (**Annexure 1**).
- d. CD containing the presentation made by the consultant's team as described above.
- e. The first hearing of the STC may be scheduled within 20 days of the submission of Development proposal along with all required documents & prescribed formats.
- f. STC will, after scrutinizing the above documents, if required, convey its comments, suggestions, recommendations and instructions to alter any design aspects of the building in the Schedule STC Meeting Only.
- g. Further, the Developer is required to resubmit corrected/modified proposal in all Performa/Attachment in 8 sets (hard+ soft CD copies) within 30 days from the date of hearing & present the same in the next scheduled STC meeting, failing which the Development Proposal will stand rejected with record in the STC meeting.

**APPENDIX - A**

<b>PROJECT PERSONNEL ON RECORD AND CONTACT INFORMATION</b>		
1.	Project Reference No. (STC Folio No)	
2.	Building Proposal Ref. /File No.	
3.	Project Name	
4.	Project Address	As mentioned in Building Development Proposal File
5.	Project Proponent/Developer	
	Name & Signature	
	Address	
	Telephone /Mobile / email address	
6.	Architect / Engineer	
	Name, qualifications & License No.& Signature	
	Address	
	Telephone /Mobile / email address	
7.	Structural Engineer	
	Name, qualifications & License No.& Signature	
	Address	
	Telephone /Mobile / email address	
8.	Geotechnical Consultant	
	Name, qualifications & License No.& Signature	
	Address	
	Telephone /Mobile / email address	
9.	M.E.P. Consultant	
	Name, qualifications & License No.& Signature	
	Address	
	Telephone /Mobile / email address	
10.	Project Management Consultant	
	Name, qualifications & License No.& Signature	
	Address	
	Telephone /Mobile / email address	
11.	Environment Consultants	
	Name, qualifications & License No.& Signature	
	Address	
	Telephone /Mobile / email address	

**APPENDIX - B**

<b>PLOT AND GEOTECHNICAL INFORMATION</b>		
1.	Area of Plot in sq.mt.	
2.	At which depth suitable Founding strata is available, (in meter)	
3.	Nature of foundation recommended	
4.	Ground Water table level with respect to existing ground level	
5.	Number of basements proposed with justifications.	
6.	Total depth of excavation (in meter)	
7.	Arrangement for shoring.	
8.	Details of the structures along with height abutting the boundaries of the plot.	
	North Side	
	West Side	
	South Side	
	East Side	

## APPENDIX - C

### DESIGN BASIS REPORT

Following data should be part of Design Basis Report.

- **Brief Description of the Project** - Number of basements, commercial floors, residential floors, Service floor, refuge floors, projection above terrace level and number of additional/ provisional floors considered in design.
- **List of Codes** - Codes which are considered in design. If any specific reference is taken from foreign codes, same should be clearly mentioned. Any specific assumption in the design should be supported by reference papers.
- **Loading Parameters** - All the loading assumptions shall be clearly mentioned in A3 size GA drawings with sunken loading, live load. Typical sections indicating the elevation / facade features shall be shown. Assumptions and the basis of the same for the elevation features above terrace slab shall be mentioned. Calculation of Time Period for the structure, Importance factor, performance factor shall be specified. Wind terrain category, Gust wind calculations shall be mentioned.
- **Providing loading diagram** for each floor separately.
- **Clear cover to Reinforcement** - These shall be mentioned for all structural members with minimum fire rating of 2 hours for columns, shear walls and beams and 1.5 hours for slabs.
- **Grade of concrete** - Minimum Grade of Concrete Mix for various RCC elements viz. beams, slabs, columns, shear walls etc. shall be M 25 & Minimum size/ thickness of RCC Column / Shear Wall / Lift Wall shall be 230mm.
- **Exposure condition** - Exposure condition assigned to site should be specified.
- **Wind Tunnel testing** - Wind tunnel analysis should be carried out for all structures with the height more than 100.00 mts. from the normal ground level, keeping in mind that present condition as well as likely development in the vicinity area after the completion of the project having shapes other than for which provisions are available in IS codes, (for non-uniform layout/section).
- **Construction Sequence and loading parameters for the same** - if due to any site constraints the loading on the floor slabs is to be enhanced, the mention of the same and calculations for the same shall be provided.
- **Proposed Approach to Structural Analysis** - Various flooring systems considered in the structure, the software used for analysis and design approach adopted shall be specified. Release in moments of link beams, cracked moment of Inertias for structural members along with the assumptions for the same shall be specified.
- **Load Combinations** - Various load combinations used in the design of individual members. Additional combinations from the Wind tunnel tests considered, if any.
- **Software Used.**
- **Soil Profile in Brief** - In brief the soil profile of the project along with the Safe bearing capacity and the type of foundations adopted.
- **Soil Retention system** - A brief description of the soil retention system adopted for the project along with the construction sequence.
- **Key Plan** - showing Expansion / Separation joints (if any).
- **Added Features** - If any additional features are considered in design such as dampers, out rigger beams, etc. shall be specified clearly stating the purpose of the same.
- **Facade, Crown and other elevation features** - provide Concept and Design in report.

## APPENDIX - D

I DESCRIPTION OF SUB - STRUCTURE			
1.	No. of basement		
2.	Minimum clearance between outermost basement retaining wall and compound wall		
3.	Has a Shoring system been installed? Submit sectional detail of the shoring system		

<b>I DESCRIPTION OF SUB - STRUCTURE</b>			
4.	Give details of methodology used to resist uplift pressure due to ground water for tower portion as well as the portion outside the tower.	Bottom level of Raft w.r.t ground level (mts) Total downward load of self weight of raft + counter weight of Raft + Rock anchors if any (For raft spanning between columns) Whether pressure release pipes have been used? Water level assumed for uplift calculation.	
5.	Description of the foundation for the tower block		
6.	Nature of Foundation	Piles, Spread Footing, Combined raft, Piled raft etc.	
7.	SBC assumed T/sq.mt.		
8.	Sub-grade Elastic Modulus		
9.	Flooring system of the basement		
10.	Retaining wall types and Sequence of backfilling	Whether propped cantilever, cantilever supported between buttresses / counter forts, etc.	
11.	Intended Use of basements		
12.	if rock anchors are used, are they grouted after installation and stressing?		
13.	Is structural steel used in the construction of the sub-structure?		
14.	If yes, what are the measures taken for its fire proofing and corrosion resistance?		
15.	Whether Expansion/ Separation joints provided? Whether expansion joint/separation joint continues through basement? If yes, detail at Basement level & retaining wall junction Separation joints details at roof level		

**Additional Information**

Sr. No	Item	References
1	Property Details	
	Project Name	
	Project Address	
	Height of Structure	
2	Details of structure/s along with height abutting boundaries of the plot	
	North Side	
	South Side	
	East Side	
	West Side	
	No. of Basement	
	Height of each basement	
3	Soil investigation Details	
	Boring Methods	(Include Double / Triple tube for boring)
	No. of Bore holes (As per ISI 16700)	
	Spacing of Bore holes (As per ISI 16700)	Per wing
	Terminated Depth of Boreholes (As per ISI 16700)	
	GWL(m)	
	Testing Laboratory (soil & rock)	NABL Accredited (Preferred)
	Field permeability test	Preferable
4	Foundation	
	Type of Proposed foundation	
	Depth of footing/raft, pile termination	
	Load calculations/Contact Pressure	Factored load on footing or column/each pile group (YES/NO)
	SBC estimated	Methods



Sr. No	Item	References
	Sub grade Elastic Modulus	Based on Lab/field Test
	Settlement estimated	YES/NO
	Uniform/Differential settlement	YES/NO
4.1	Raft foundation	
	Bottom level of raft	
	Minimum clearance between outmost basement retaining wall and compound wall	
	Size	
	Thickness	
	Depth (indicated in c/drawing)	
	Modulus of sub gradation reaction	Based on experiment/interpreted
	Modeling of soil for raft foundation	As per Clause 9.7.1 of IS 16700 (2017)
	Anchors details (if required)	YES/NO
4.2	Pile raft	
	Sharing of load by raft and piles	Calculations included(YES/NO)
	Pile group test (Pile cap rest on strata) otherwise Footing load test for confirmation of raft load sharing	YES/NO
	Foundation settlement and pressure measurement	As per Clause 9.7.1 of IS 16700 (2017)
4.3	Pile foundation (Design as per relevant BIS and other methods)	
	Type, diameter, spacing	
	Socket depth	1.5D,3D etc.
	Foundation settlement and pressure measurement	As per Clause 9.7.1 of IS 16700 (2017)
4.4	Lateral load analysis	IS code or p-y curves
	Pile load test	Static (% as per BIS) then dynamic load test and pile integrity test
	Initial	
	Routine	
	Any other field test conducted / recommended	
4.5	Uplift capacity of foundation	Detail calculations are required in the report
	Based on wind pressure	YES/NO
	Based on GWL	YES/NO
	Based on earthquake	YES/NO
	If rock anchors are used, are they grouted after installation and stressing? Or passive anchor	YES/NO
	Whether pressure release pipes have been used?	YES/NO
5	Shoring Arrangement	Detail calculations are required in the report
	Has shoring system been installed?	YES/NO
	Type (touching piles c/c spacing, secant pile/ diaphragm wall)	
	Size and depth	
	Anchors if required	Preferably no anchors. Only case specific with all necessary permissions.
6	Retaining wall (if any)	YES/NO
7	Submission of final report	In advance to authority. Should reach the members 5 days before the meeting.

## II. DESCRIPTION OF SUPER STRUCTURE

1.	No. of Floors & height of building (in mts)	
2.	Shape of Building, Plan, Elevation, Whether Symmetric in Elevation	
3.	Maximum plan dimension in either direction (in mts).	
4.	Plan Aspect Ratio	
5.	Typical Floor to floor height (in mts) Maximum floor to floor height in entire height of building (in mts).	
6.	slenderness ratio (Height of Building till Terrace / Minimum Dimension of Building)	
7.	Type of floor slab	
8.	Average thickness of floor slab in mm.	
9.	Whether column are RCC, Composite or In structural steel	

10.	<u>Lateral System</u> Describe lateral load resisting system. Whether the geometry of the building is symmetric	
11.	Use of floor different levels (Residential/Commercial/Recreational, mix)	
12.	Is there any transfer level? Is transfer girder part of lateral load resisting system? If Yes, depth of transfer girder	
13.	Whether expansion joint is provided?	

**ANNEXURE - 1****Check List for the Main Structural Consultant**

The main structural consultant is required to submit following information.

1. Provide **Design Basis Report** as per the document.
2. Provide description of Sub-structure and Super-structure as per the format given in the **Appendix D (I & II)**.
3. Provide brief Description of Structural System with sketches, images of drawing, etc. with specific focus on Lateral load resisting system.
4. Provide brief note on modeling, software used etc. Clearly mention whether infill / partition wall is idealized as part of lateral load system?
5. Detailing of non-structural element for lateral loads.
6. Provide the height of building in meters.
  - 6A) Provide plan dimensions of the building (mts x mts)
7. Provide following EQ loading details.
  - a) Zone Factor
  - b) Importance factor
  - c) Response Reduction factor
  - d) Soil Type
  - e) % LL considered in seismic
  - f) Time Period in the horizontal X-direction(sec) (from formula in Code)
  - g) Time Period in the horizontal Z-direction (sec) (from formula in Code)
  - h) Total Seismic weight (Sw) of building (kN)
  - i) Static Base-shear in X-direction (as % of Sw)
  - j) Static Base-shear in Z-direction (as % of Sw)
  - k) Table of distribution for static base shear
  - l) Max. deflection at roof level (in mm)
  - m) Max. inter storey drift /Height
  - n) Load combination
  - o) Cumulative mass participation
8. Provide following Wind loading details.
  - a) Category of building
  - b) Class of building
  - c) Basic wind speed in m/sec.
  - d) Maximum wind pressure (kN/m<sup>2</sup>)
  - e) Force coefficient
  - f) Wind Base-shear in the horizontal X-direction (kN)
  - g) Wind Base-shear in the horizontal Z-direction (kN)
  - h) Gust factor calculations (if Gust-wind applied)
  - i) Details of wind-tunnel force data (if applicable)
  - j) Estimated magnitude of wind induced vibrations
  - k) Max. deflection at roof level (in mm)
  - l) Max. inter storey drift.

9. Provide following data from Dynamic Analysis

Modes	Frequency in Hz	Time Period in Sec	X-Direction participation	Y-Direction participation	Z- Direction rotational participation
Mode 1					
Mode 2					
Mode 3					
Mode 4					
Mode 5					
Mode 6					
Mode 7					
Mode 8					
Mode 9					
Mode 10					
	Summation				
	Note: First two modes should not be a torsional. Reference can be made to IS 1893 and 16700.				

10. Provide Table for lateral deflections (mm) at Terrace Level in the following format.

Load Case	Dx- max	H/Dx	Drift-x	Dz- max	H/Dz	Drift-z
DL						
DL + LL						
FQx						
EQz						
Wx						
Wz						

11. Provide Corner displacements (mm) for Torsional Irregularity (along x-direction) in the following format.

Load Case	Corner-1	Corner- 2	Corner- 3	Corner- 4	Avg-x	% (Max./Avg.)
Eq-x						
WI-x						

12. Provide Corner displacements (mm) for Torsional Irregularity (along z-direction) in the following format.

Load Case	Corner-1	Corner- 2	Corner- 3	Corner- 4	Avg-x	% (Max./Avg.)
Eq-z						
WI-z						

13. Provide acceleration (mg) values in the following format.

Eq-x	Eq-z	WL-x	WL-z

14. Provide following data regarding Vertical Elements.

- Size of maximum loaded column
- Gravity load on max. loaded column
- Axial stress in max. loaded column (Gravity loads)
- Grade of max. loaded column
- Axial settlement in max. loaded column
- Axial settlement in min. loaded column
- % Base-shear resisted by all columns along X (static)
- % Base-shear resisted by all columns along Z (static)

15. Provide, if applicable, following data regarding Floating Columns.

- Total gravity load on floating column (provide table if there are multiple floating columns)
- Size and span of girders supporting floating columns
- Number of floors supported by floating columns
- Deflection of girder under column (from model)
- Deflection of girder under column (from s/s action)
- Specific details about floating columns on cantilever girders (Refer Table below)

Column	Supporting Girder		Deflection Values		Floors Above	Total Load in Column
	Size	Span	Model	S/S Action		

S/S denotes the simply supported.

16. Provide, if applicable, following data regarding soft story effect.
  - a) Stiffness of lower floor (in deflection/KN)
  - b) Stiffness of upper floor (in deflection/KN)
  - c) Relative stiffness ratio (upper/ lower)
  - d) Level of story
  - e) Number of floors above soft story
17. Provide, if applicable, following data for each cantilever.
  - a) Cantilever span
  - b) Structural system
  - c) Nature of usage
  - d) Maximum elastic deflection under gravity loads
18. Provide stability calculations for uplift and overturning (as per relevant IS Codes)
19. Typical design calculations for footings
20. Typical design calculations for RCC columns Composite Columns
21. Typical design calculations for RCC walls
22. Typical design calculations for RC beams (Or Steel Beams)
23. Typical design calculations for RCC Girders (Or Steel Girders/ Truss)
24. Typical design calculations for Steel Bracings
25. It is compulsory to conduct Wind tunnel studies for any Tall Building as per IS:16700.
26. Provide a note on special provisions suggested for the building (like dampers etc.)
27. Provide a design of external facade, special elevation features and connecting bridges etc. between building, if any.
28. Provide regular maintenance plan for entire life and dismantling plan at the end of life of structures.
29. Soft copy of model including input and output.
30. Soft copy of Power point presentation including all above points.
31. items 1 through 27 in soft copy.

**Note:** Provide appropriate unit against each quantity.

By order and in the name of the Governor of Gujarat,

**PRAKASH DUTTA,**  
Officer on Special Duty & Ex-Officio  
Joint Secretary to Government.

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Government Central Press, Gandhinagar.